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Dealing with Complexity

in Dryland Management in Ethiopia:

An Integrated Approach
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UNDP Ethiopia



1. Introduction

The challenges of managing drylands are multi-faceted and include numerous socio-economic and bio-physical problems. Some of the key challenges pertain to under-developed socioeconomic services and infrastructure, widespread human and livestock diseases, inaccessibility of livestock markets, scarcity of water and extreme weather, land degradation, range land deterioration, and rapid expansion of invasive species. These socio-economic and biophysical problems are inter-related and have hindered development. Hence, the dryland areas experience recurrent droughts, and rely on continuous food aid or productive safety net programme support.



About 75% percent of Ethiopia's landmass is categorized as dryland, experiencing moisture stress during most days of the year, and having only 45-120 days of growing season per year (Kidane Giorgis 2014). These areas are home to about one-third of the country's population, as well as to a comparable proportion of livestock. The most widespread livelihood in the drylands is pastoralism, which relies on a diversity of grass and shrubs as key productive inputs. The total pastoral area in Ethiopia is estimated at about 625,000 km², which is 57 percent of the country's total area, of which the Afar National Regional State comprise 52 percent (UNDP, 2012/13). A major portion of the Afar region is now degraded scrub and range land, with only about 2.5 percent of the land under cultivation. About 80 percent of the estimated population of 1.4 million are transhumant pastoralists, while the remainder is practicing agro-pastoralism. Livestock are kept primarily for their products (milk, milk products and meat) and income on sales.

Beside the socio-economic and bio-physical challenges mentioned above, climate change is increasingly becoming a burden, affecting the livelihood pattern and strategies of the poor, and triggering food, feed, water and social insecurity, particularly through increased droughts. Drought has been a feature of the Afar region since time immemorial and was seen as recurring within intervals of an average of 10 years. However, over the past decades, drought seems to occur more frequently, in some areas almost every year, leading to severe land degradation and losses of livelihoods.

To address these problems, numerous sectoral projects and interventions were initiated and implemented for decades. However, most of them have failed to produce expected impacts, since they attempted to address single/ sectoral problems. For instance, range land management projects have aggravated invasiveness of some native acacia species in Borana, and outbreak of *Prosopis juliflora* in Afar. Since 2010, UNDP followed a different approach and supported the Afar Regional Government in implementing the Afar Integrated Drylands Management Project (AIDLMP) in Mille Awra, Chifra, Dewe and Ewa districts of the regional state. The AIDLMP aimed at building capacity in natural resources management at community/kebele and woreda levels and develop local environmental action plans as the basis to strengthen and diversify pastoral livelihoods. The AIDLMP has considered the complexity of the challenges in dryland areas, and planned appropriate measures, which helped to produce promising outcomes through integrated approaches involving multiple sectors, institutions and interest groups.

This policy brief draws on the experiences of the AIDLMP to outline the major challenges in dryland management and identify opportunities, strategies and policy interventions that have been proven to be useful at project level for drylands management in Ethiopia. Policy recommendations and lessons detailed in this brief are codified from project lessons and inputs from experts expressed during the High Level Policy Forum on Drylands Management that was held in Afar region on 6-7 March 2014.

2. Summary of Recommendations

The lessons drawn from the project intervention and experts feedback during the high level policy forum can be summarized as follows:

- i. **Bridging the knowledge gap:** Dryland areas have high levels of illiteracy, low in technology adoption and human development index. Provision of basic education is vital in bridging knowledge gap through capacity building training, knowledge sharing platforms, integration of research and extension services, technology transfer and monitoring.
- ii. **Participation:** Grass-root level implementation of activities is more successful if it is done with a participatory and bottom-up approach. Intervention activities should be locally relevant, identify key stakeholders and be co-implemented. Key stakeholder participation in planning and implementation ensures ownership of the actions, learning and sustainability.
- iii. **Coordination:** Experience shows that initiatives in different areas are mainly implemented with a sectoral focus, independent of each other, and with little interaction between initiatives across sectors. Coordinating all interventions to achieve a common goal of sustainable drylands management enhances knowledge and resource sharing, avoids duplication of efforts and conflict, document good practices and ease follow-up and monitoring.
- iv. **Scaling-up good practices and technology adoption:** There are very few integrated development projects like the AIDLMP in dryland areas of Ethiopia. Yet, dryland areas cover large parts of the country, with immense problems. Scaling-up implementation of good practices and approaches of integrated projects/programmes can help to address key development challenges of the country.

AFAR INTEGRATED DRY LAND MANAGEMENT PROJECT DESIGN

The Afar Integrated Dry Land Management Project was developed by UNDP Ethiopia in collaboration with the Ministry of Finance and Economic Development, the Environmental Protection Authority, the Afar National Regional State, selected woredas and local communities.

The purpose of the project was to strengthen the adaptive capacities of the Afar people in building climate resilient sustainable development through the implementation of the regional and woreda level Climate Change Adaptation Programme, as the basis for implementing local level integrated dryland management programme initiatives. The project

was a scale-up from the pilot 'Mille Project' (2006-2008). The project has been funded by the Royal Government of Norway, as part of UNDP's global Integrated Drylands Development Programme (IDDP) within the framework of UN Climate Convention on Desertification (UNCCD).

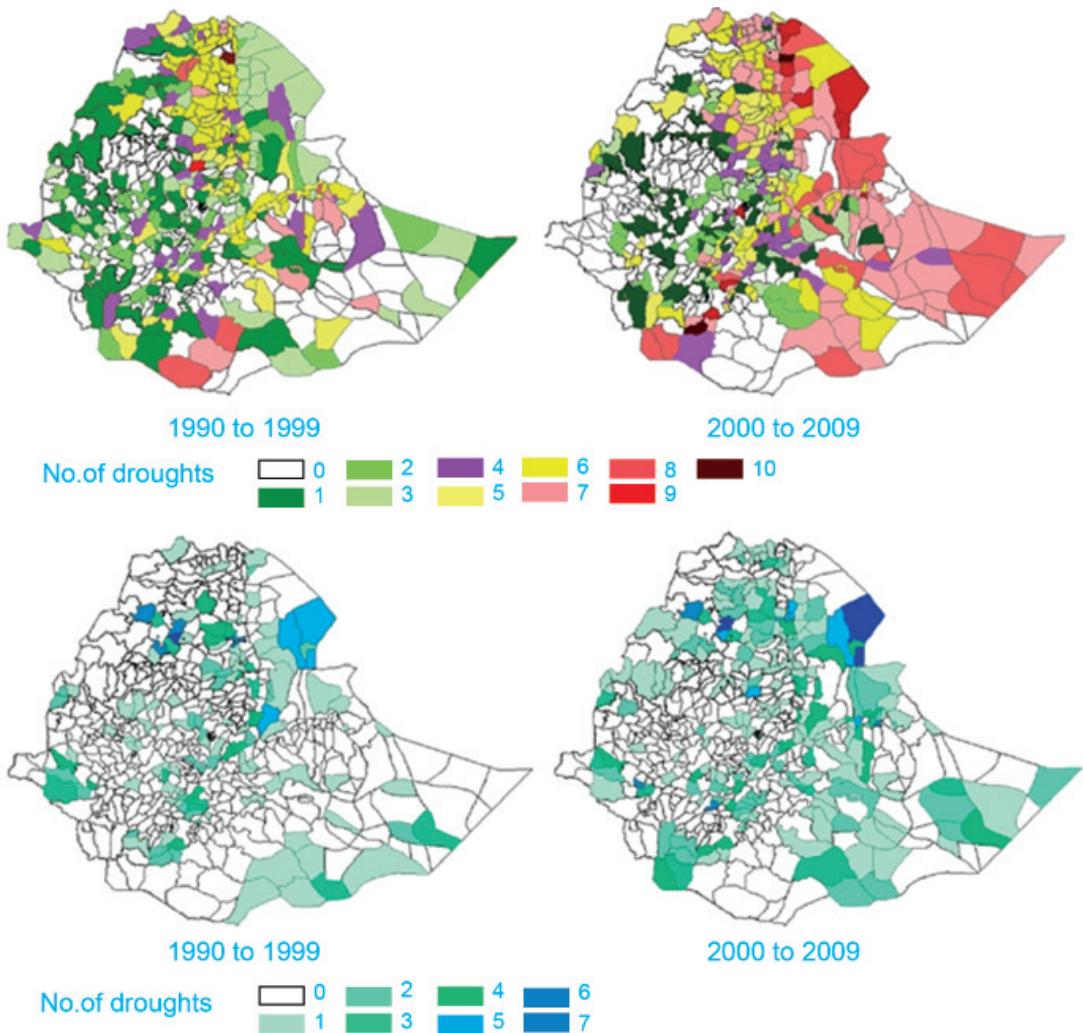
The project was designed and implemented through active participation of key stakeholders, beneficiary communities and different sector agencies at local and regional state level. The different sectors also planned and implemented in an integrated manner in order to maximize community benefits and synergy among the different interventions.

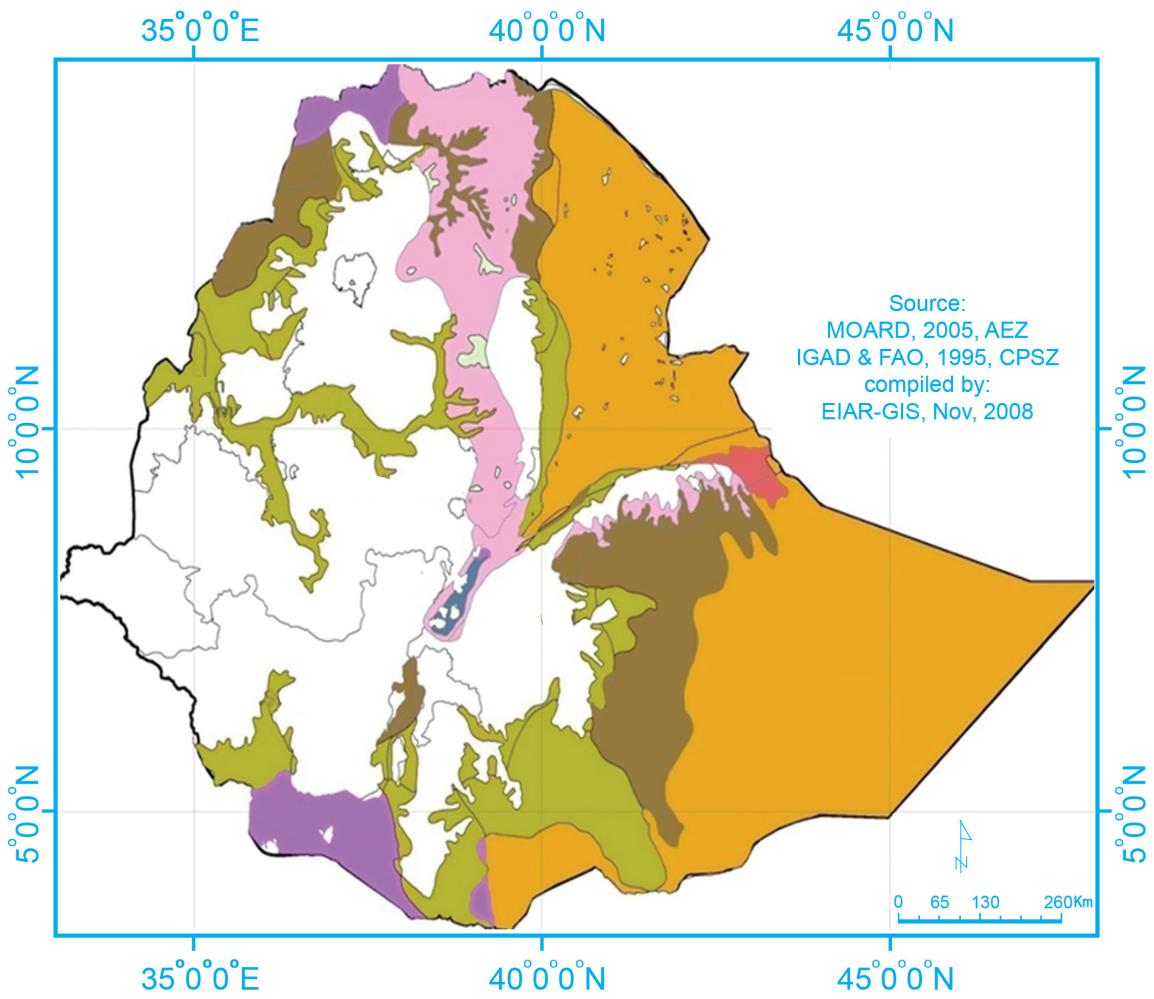
3. The Challenges of Drylands in Ethiopia

Ethiopia is classified into 32 major agro-ecological zones (MoARD 2005). According to this classification, the dryland areas of Ethiopia include arid, semi-arid and sub-moist zones with a length of growing season less than 120 days. Most drylands are located in the low lands, along borders with neighboring countries (Djibouti, Eritrea, Kenya, Somalia, South Sudan and Sudan), and at the center along the Great Rift Valley. The drylands falling within different agro-ecological zones are marked with different colors in the map shown below. This constitutes over 60 percent of Ethiopia's land cover, of which the hot arid agro-ecological zone is predominant.

In dryland areas, like Afar, pastoralism is the predominant system, which is highly dependent on diversity of grasses and shrubs as key productive inputs. The availability of these resources are constrained by various biophysical problems discussed in the previous section, including climate change. The agricultural sector's climate resilience strategy of Ethiopia has mapped climate change related hazards like increased frequency of drought and flood, as shown in the maps below. Similarly, a case study in Ander Kello Kebele of Chifra Woreda by ACCRA (2011) reported major climate related hazards such as drought, erratic rainfall, human and animal disease, and shortage of water.

The drylands of Ethiopia – especially those in the arid and semi-arid zones – are relatively underdeveloped, with the lowest indices on many social and economic development parameters. For instance, Afar scored lowest in net enrollment at primary school level, with 24.4 percent in 2008-09 as compared to Amhara, the region with the highest score at 101.4 percent (Jennings, 2011). On the other hand, the arid and semi-arid lowlands have good potential for development, since they are often endowed with several perennial rivers that can be used for irrigated agriculture. There is a growing trend of large scale-agricultural development in these areas, as the country has





Legend: Dryland AEZ's

A2. Tepid to cool & mid highlands	A1. Hot to warm & lowland plains
SA1. Hot to warm semi-arid lowlands	M1. Hot to warm moist lowlands
SA2. Tepid to cool seb-moist mid highlands	SA2. Tepid to cool semi-arid highlands
SM2. Tepid to cool seb-moist mid highlands	SM1. Hot to warm sub-moist lowlands
Regional boundary	SM3. cold to very cold sub-moist sub-africoplains
National boundary	

prioritized investments in building dams and irrigation canals. This has its own problems, if not properly handled. Natural limitations to water scarcity, climate change, population growth and competing land use for substance and large-scale irrigated agriculture may complicate the efforts for sustainable drylands management, and even lead to resource use conflicts. Irrigation of drylands can cause salinity problem, which degrades land. Besides, expansion of large-scale irrigated agriculture on communal lands of the pastoral communities may lead land tenure right conflicts, disruption of the traditional way of life, and limitation of access to important cultural sites.

4. Results and Lessons from the Project

The implementation of integrated drylands management projects on the ground, such as the AIDLMP, has demonstrated the possibilities of overcoming key challenges in drylands development. The AIDLMP generated a number of good lessons that are useful for scaling up to other dryland areas of the country. These include the importance of stakeholder engagement, cross-sectoral integration, participatory planning and implementation. Participation of the beneficiaries in identification of project activities and implementation has increased the feeling of ownership, which guarantees sustainability.

Intervention	Feasibility	Impact	Recommendation
Integrated nature of design and implementation	Very High	Significant	Upscale with increase bottom-up approach
SWC	Very High	Significant	Should be featured upscale
Control of Invasives	Very High	Significant	Upscale to IGAD level
Enclosures and rotational grazing	High	Significant	Scale up with by-laws and local management plans
Fodder banks and hay production	High	Significant	Up-scaling in agropastoral land
Shifting Grazing & Destocking	High	Minimal	Design modern system of livestock mobility
Irrigation	Moderrate	Minimal	Multiple water uses & alternative irrigation mets
Shallow wells	Very High	Significant	Consider deep wells for upscaling
Roof Water Harvesting	Very High	Minimal	Upscaling as an alternative water harvesting option
Solar Panels	Very High	Significant	Upscale with alternative batteries
Livestock Marketing Center	Very High	Significant	Upscale with diverse services
Alternative Construction	High	Minimal	Upscaling improving size, design & amenity values
Saving Rings	Very High	n.a.	Upscale with strong legal support
Cooperatives	Very High	Significant	Upscaleing with strong by laws
Professional Trainings	Very High	Significant	Upscaling with sufficient professionalism and longer duration
School Clubs	High	Minimal	Upscaling with diverse activities
Early Warning Systems	Moderate	Negible	Upscaling and revitalizing traditional EWS
Awareness Raising	High	Minimal	Upscaling improved and continued activities

The project implemented over 20 interventions in different localities, based on local beneficiaries' demand. The intervention activities with high impact and community acceptance include:

small scale irrigation development, soil and water conservation works, mud bricks house construction, solar panel provision for schools and rural health centers, water provision/ hand pumps, formation of saving and credit associations and start-up support, range-land development (area closure, invasive weed management, fodder bank establishment), capacity building/ skill development training, experience sharing visit, information materials dissemination, livestock market center establishment, and livestock drugs supply, to mention a few.



The local communities are mobile and build temporary houses using locally available wood. Introduction of mud bricks for housed construction reduces the pressure woodland vegetation. Solar panels also helped to overcome shortage of refrigeration facilities at health center, and provided light for schools. The later has enabled to conduct evening classes for adults and eradication of illiteracy. The soil and water conservation, development of hand-dug wells, and small-scale irrigation development has contributed to addressing the problem of water scarcity in area. However, hand-dug wells dry up during dry seasons, indicating the need for deep wells. Further, range land management interventions also increased fodder availability for the livestock and crop production practices, which has in turn reduced incidence of conflict with neighboring communities. For instance, the project started fodder bank establishment and hay production, with pilots on 2.5 to 10 ha per woreda. Productive fodder crops introduced include Sudan grass, Elephant grass, Panicum, cowpeas and pigeon peas. The government has also started its own regional fodder banks in areas that have access to irrigation. Formation of saving and credit association, and skills development trainings helped the youth and women starting different income diversification activities. The maximum amount to be given as a credit is 5000 Birr. Much of the credit is invested into livestock trade. The percentage of women receiving the credit is very high. The project has supported this through the contribution of seed money (UNDP, 2014).

The findings and lessons learnt from the project were discussed and presented at a 'High Level Policy Forum on Dryland Management in Ethiopia' that was organized at the end of the project implementation period in early 2014. The research papers presented document that drylands are susceptible to degradation through soil erosion (wind, flood), salinity of irrigated land, invasive plants, increased incidences of climate related hazards and conflicts over resource use. The forum also helped to demonstrate that there are many scientifically proven technologies for agriculture, rural development and natural resources management. Besides, UNESCO has also recently published research finding and experiences of development practices of over 50 years in drylands all over the world (Lee and Schaaf 2008). Yet, such technologies are often shelved due to poor or no cooperation and integration between research and development practices.

5. Policy Choices and Options

The following policy choices and options emanate from lessons learnt from the project's implementation, expert observations, and the findings of the research papers presented at the High level Policy Forum:

- i. Need to strengthen/reinforce decentralization of natural resources management in order to engage the relevant authorities at various levels in charge of drylands management coordination; planning, implementing, regulating and monitoring the sustainable utilization of natural resources
- ii. Enhance access to basic education for all through scale-up of alternative basic education that has proven successful in many pastoralist areas;
- iii. Implement new and innovative technologies including introduction of drought tolerant and short term maturing crops for sustainable drylands management, through promotion of the interface between science-based solutions, research and indigenous knowledge, in order to improve on-ground decision making;
- iv. Enhance knowledge sharing, environmental education, and linkages between academia and local communities, to strengthen knowledge generation and dissemination;
- v. Integrate research and extension services, along with the establishment of monitoring and observation systems for sustainable drylands management and in line with an integrated ecosystem approach;
- vi. Promote diversification of production systems and livelihoods, which may involve intermixing trees, crop and livestock operations; scale-up of insurance scheme and development of market to reduce the overall risks faced by pastoralists and farmers;
- vii. Strengthen or support integration of groundwater and land management, which may involve introduction of improved drilling and pumping technologies (e.g. solar powered), integrated with strategic watershed management to maintain vegetation cover, so as to increase groundwater recharge and avoid overexploitation, and augmenting ground water recharging with floodwater harvesting, using technologies like ponds and tide ridges;

6. Conclusion

Covering the largest parts of Ethiopia, drylands play a pivotal role in the envisaged economic development of the country. There are several challenges to overcome, however, including climate change. Many good practices and technologies for sustainable dryland resources management exist that enable communities and authorities to adapt to and mitigate the effects of climate change. Successful implementation and scaling-up of such good practices and technologies requires an enabling policy environment and strong commitment from all stakeholders.

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